DOCUMENT RESUME

ED 319 720 SP 032 345

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TITLE Exercise Do's and Don'ts: Guidelines for Fitness Activities.
PUB DATE Mar 90
NOTE 7p.; Paper presented at the Annual Meeting of the American Alliance for Health, Physical Education, Recreation and Dance (New Orleans, LA, March 28-31, 1990).
PUB TYPE Speeches/Conference Papers (150) -- Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Exercise; Exercise Physiology; *Injuries; *Physical Fitness; Sports Medicine; *Stress Variables

ABSTRACT

Many common exercises are contraindicated due to their potential for injury relative to benefit produced. Specific contraindicated exercises are discussed, and safer, more effective exercises are recommended. Current stretching and toning guidelines are also given which apply to all fitness activities. (Author)

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Exercise Do's and Don'ts: Guidelines for Fitness Activities

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Exercise Do's and Don'ts: Guidelines for Fitness Activities

Runner/cardiologist George Sheehan has said that running does three things for you and two of them are bad. While it is great for the cardiovascular system, it shortens and tightens muscles that are used repetetively, leaving the opposing, relatively unused muscles weak. This may lead to muscle imbalances.

Actually almost any repetitive activity, even habitual postures assumed in the struggle to stand erect against the pull of gravity, can selectively tighten or weaken selected muscles and tendons. Shortened muscles pull unevenly across joints, producing skeletal misalignment. This results in undue stress on other groups of bones and muscles, may produce aches and pains, and may increase susceptibility to injury. Injuries are primarily to the musculo-skeletal system: shins, back, knees. We have very few cardiovascular injuries. Many injuries reported by beginners occur in the first four weeks of a new exercise program. The solution to this problem is to stretch tight muscles and strengthen weak muscles. Muscles and connective tissue need to be gradually conditioned for the impact of many forms of aerobic exercise. Tight areas that need to be stretched commonly include pectorals, lower back, hip flexors, hamstrings, and calves. Weak areas needing toning include upper back, abdominals, hamstrings, and shins. In selecting exercises for general conditioning, those that produce the opposite effect should be de-emphasized, i.e. emphasize stretching the lower back and tightening the abdominals rather than the reverse.

In developing a stretching routine, keep in mind these general guidelines:

- Flexibility is partially genetically based. It can be improved within an individual's genetically determined range, but all people cannot achieve equal levels of flexibility.
- There is no such thing as general flexibility; it is specific to a muscle group or joint. A person may have flexible shoulders and tight hamstrings. Even one leg may be tighter than the other.
- Stop a stretch when you feel initial tightness. Overstretching produces injuries. Contortionism should be avoided in programs designed for fitness. Backbends, splits, and nose to knee hamstring stretches are fine for gymnasts or dancers, but unnecessary, even hazardous in general fitness programs.
- Stretching is not the same as warmup. It is best if muscles are first warmed by walking or other large-muscle activity. Once you break a sweat, muscle core temperature has increased and muscles are more elastic--stretching is easier. Perhaps the best time to stretch is at the end of an exercise period, during the cool down. If time is limited, focus stretching on 5-6 major areas that were tightened by the previous activity, and hold each stretch 15-30 seconds,i.e. if you were jogging, stretch back, quadriceps, hamstrings, calves and hip flexors. This is more effective than spending time stretching neck, waist or shoulders.

SP 032 345

Strength is developed by doing a few, no more than 20-30 repetitions, of an exercise against resistance. Muscular endurance is developed by doing many repetitions, more than 30. There is some crossover from strength to endurance. If a person can lift 10 pounds 10 times, then he can probably do 50 lifts without the weight, but being able to do 50 lifts with no weight does not guarantee a person can lift 10 pounds even once. Adding more sets or repetitions requires a lot of time, does not give more muscle tone or firmness, and may result in overuse injury to joints. If you can do more than 20-30 repetitions of an exercise, add resistance and decrease the repetitions. This is efficient because you gain more benefit in fewer repetitions. Self-resistance, partner resistance, and elastic resistance are easy and inexpensive ways to increase strength without weight training equipment.

Guidelines for strength exercises:

- Do only one good exercise per muscle group. If the muscle is thoroughly fatigued, it will be stimulated to adapt and strengthen. You don't need to do 10 different inner thigh exercises to reap benefits.
- Do strength exercises only every other day. More is not better.
- Always control the movement. Do not swing, fling, or lockout joints. If in doubt, go more slowly.

Exercises have been taken for use in general fitness classes from many areas with deep-seated traditions: dance, gymnastics, yoga, but in fitness classes, we are not training dancers or gymnasts. Dancers and gymnasts may be willing to pay a price for their art--many suffer back injuries in their efforts to excel. But our students want to be fit, not hurt. In prescribing exercises for fitness programs, keep in mind the principle of individual differences. While one person may never be injured doing a high-risk exercise like standing toe touches, another person may find that it only takes a couple repetitions to strain a muscle. Since we don't know into which category an individual may fall until it is too late, it is wise to be careful. Exercises are not really "bad" or "good". There are thousands of exercises to select from, each with various levels of benefit and risk. In developing a safe and effective exercise program, our task is to select exercises with the greatest benefit and the least amount of risk. Here are examples of commonly done high risk exercises and the body area which they tend to overstress. Safer, more effective substitutes are given in parentheses.

Neck

. Avoid: Full head rolls - stress cervical vertebrae
(Half head rolls)

Arms/Shoulders

. Avoid arm exercises at or above shoulder level - overstress trapezius
(Exercise arms below shoulder level, use resistance)

Waist/Abdominals

. Avoid: Side bends with arms overhead - stress lower back
(Place one hand on leg to support back)

. Avoid: Windmill toe touches or elbow-knee twist - standing forward flexion strains lower back ligaments. Rotation adds a shearing force on lumbar discs.
(Oblique abdominal curls)

. Avoid: Double leg lift - stress iliopsoas/lower back.
(Bent-knee abdominal curls)

Lower Back

. Avoid: Yoga plow or inverted bicycling - stress back and neck
(Lower back stretch/walking for warmup)

. Avoid: Yoga cobra - compresses vertebrae **(modify)**

. Avoid: Back arching arm and leg lift - compresses vertebrae
(Opposite arm and leg lift)

Hamstrings

. Avoid: Standing toe touches - strain lower back ligaments
(Sitting or lying hamstring stretch)

. Avoid: Donkey kicks - compress lumbar vertebrae
(Partner hamstring curls)

Quadriceps

. Avoid: Deep lunge with knee past ankle - strains patellar ligament
(Keep knee over foot)

. Avoid: Hurdle stretch - strains knee ligaments and joint capsule
(Bring foot in front)

. Avoid: Double knee quad stretch - knee joint strain
(Standing quadricep stretch)

Outer Hip

. Avoid: Hydrants - may hyperextend back.
(Hydrants with pelvic tilt, bent knee, resistance)

Exercise programs designed for fitness should include stretching and toning exercises to reduce risk of injury or development of muscle imbalances. Safety and effectiveness of exercises must be considered before inclusion in any exercise routine since some exercises carry a high potential for injury. It is also important that exercise participants be made aware which exercises are high-risk and what substitutes are more effective so that they do not blindly follow an uninformed exercise leader down the path to injury.

"Exercise Do's and Don'ts"

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